

EXHIBIT A

Gregory Nicolaysen

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Certified Specialist,
Criminal Law (CA)

May 12, 2022

Mr. Shawn Andrews
Assistant U.S. Attorney
U.S. Attorney's Office
312 No. Spring St.
Los Angeles, CA

RE: United States v Alejandro Sandoval, CR 18-774-JAK-3

Dear Mr. Andrews,

This letter constitutes a disclosure pursuant to Fed.R.Crim.P. 16(b)(1)(C) in regard to defense expert Theron Vines, who will be testifying as a defense expert at trial. Mr. Vines' Curriculum Vitae is attached hereto.

A. Background

On February 05, 2021, Mr. Vines obtained a known reference DNA sample from defendant Alejandro Sandoval at the facility of Pure Gold Forensics, located in Redlands, CA. Mr. Vines collected the sample directly from Mr. Sandoval by swabbing the inside of the cheek, which is known as a buccal sample.

On March 23, 2021, pursuant to a court order, Mr. Vines traveled to the DEA lab in Vista, CA, to conduct swabs of two clear plastic bags that were designated by the Torrance Police Dept. as Items 300 and 301 and subsequently designated by the DEA lab as Exhibits 15 and 16, respectively. See Exhibits A and F to the suppression motion filed by the defense on September 16, 2021 (Pacer docket #559). AUSA Shawn Andrews was present during this procedure.

Letter to AUSA Shawn Andrews
May 12, 2022
Page 2

On April 12, 2021, Mr. Vines issued a written report, attached hereto ("April report"), detailing his observations and conclusions in regard to his DNA analysis from the above-referenced swabs, which are addressed below. This analysis involved a manual interpretation of data, which was validated in accordance with accepted standards and procedures in the field of DNA analysis. The report refers to Mr. Sandoval's reference sample as Item 1; Exhibit 15 as Item 2; and Exhibit 16 as Item 3.

On September 3, 2021, Mr. Vines issued a supplemental written report, attached hereto ("September report"), detailing his observations and conclusions in regard to a re-examination of the DNA data utilizing a new testing method called STRmix that was not available at the time the original analysis was done. The STRmix method applies a testing procedure called probabilistic genotyping. Mr. Vines' DNA analysis using the STRmix method was validated in accordance with accepted standards and procedures in the field of DNA analysis. Like the April report, the September report refers to Mr. Sandoval's reference sample as Item 1; Exhibit 15 as Item 2; and Exhibit 16 as Item 3.

B. Opinions For Testimony At Trial

Based on his analyses of the DNA data as set forth in the April report and September report, Mr. Vines will testify at trial as to the following opinions / conclusions:

(1) human DNA was obtained from both Item 2 and Item 3, from which DNA profiles were developed.

(2) with regard to the manual analysis addressed in the April report: (a) for item 2, due to the low-level of DNA detected, this profile was not suitable for comparison using manual interpretation methods; (b) as to Item 3, the manual analysis was able to differentiate between major and minor contributors to the DNA profile, and Mr. Sandoval was excluded as a major DNA contributor. Due to the uncertain number of contributors and the low level of DNA detected, the minor contributor profile was not suitable for comparison purposes.

(3) with regard to the STRmix analysis addressed in the September report, Mr. Sandoval is excluded as a possible DNA contributor from both Item 2 and Item 3. By allowing the examiner to evaluate the entire DNA profile, the STRmix method does not differentiate between major and minor contributors. Using the STRmix analysis, Mr. Sandoval was excluded as a contributor from the entire DNA profile as to both items 2 and 3.

Letter to AUSA Shawn Andrews
May 12, 2022
Page 3


C. Bases Of Opinions

The attached reports provide the bases for the opinions and conclusions in detailing the testing methods and procedures utilized in the manual testing process (April report) and the STRmix testing process (September report). Moreover, the bases for the opinions and conclusions draw from Mr. Vines' professional training and experience, as detailed in his attached curriculum vitae.

In addition, the bases for Mr. Vines' opinions and conclusions are the application of accepted standards and principles governing DNA testing, as set forth in the Analytical Procedures which have been disclosed to government counsel by the defense, and which have been utilized by Mr. Vines in conducting the analyses in this case.

The defense reserves the right to supplement this expert disclosure with opinions and conclusions regarding any additional testing of samples separate and apart from Items 2 and 3 for which test results are not currently available.

Very truly yours,

A handwritten signature in black ink, appearing to read "Gregory Nicolaysen", with a long horizontal flourish extending to the right.

Gregory Nicolaysen
Counsel for defendant, Alejandro Sandoval

EXHIBIT A



303 Brookside Ave. Suite 140. Redlands, CA 92373 • 909-793-3820 • Fax 909-793-3842

Curriculum Vitae

Theron L. Vines III, MS

Updated: February 2022

Formal Education

January 2014

National University, La Jolla, CA

Master of Forensic Science - Specialization in Criminalistics

Coursework includes: Crime Scene Investigation, Criminal Profiling, Forensic Pathology, Forensic Psychology, Forensic Photography, Major Case Investigation, Trace Evidence, Advanced Forensic Toxicology, Forensic Serology and DNA, Forensic Anthropology

Thesis: "SECONDARY TRANSFER OF DNA FROM SWEAT"

June 2009

California State University, San Bernardino, CA

Bachelor of Science Biology

Minor Degree in Chemistry

Coursework includes: Genetics, Biochemistry, Organic Chemistry, Molecular Biology and Biology of Populations

Formal Education - Post-Graduate

February 2021

Straighter Line

Introduction to Statistics

Employment

08/11 - Current

Pure Gold Forensics, Inc., Redlands, CA

Attained A2LA Accreditation to ISO 17025:2017 and F.B.I. QAS 2020. Certificate #4918.01 for Pure Gold Forensics, Inc.

Attained full FSC Accreditation by the Texas Forensic Science Commission for Biology in Body Fluid Identification and DNA for Pure Gold Forensics, Inc.

Assisted in validation studies for STRmix™, DNA Extraction, Quantifiler Trio Quantitation on the QuantStudio 5, validation of Globalfiler and Yfiler Plus on the ABI 3130 Genetic Analyzer.

Assisted in the validation of a Bone Material Modification for the DNA extraction of bone and teeth.

Assist in writing protocols and updating the Quality Assurance Manual in order to comply with ISO 17025 Accreditation requirements.

President/DNA Technical Leader/Quality Assurance Officer

As President:

- Serve as point of contact for all A2LA accreditation inquiries
- Oversee all business and laboratory operations
- Ensure quality assurance compliance
- Evaluate scientific equipment and processes
- Supervise laboratory staff
- Recruit Forensic Scientists and other staff

As Quality Assurance Officer:

- Ensure that the quality requirements of the management system implemented and maintained
- Maintain quality logs
- Coordinate quality audits

As Technical Leader:

- Perform forensic biology (DNA) testing
- Perform consultative services
- Generate scientific reports detailing evidence, examinations, results and conclusions
- Peer review other Forensic Scientists work for correctness and completeness
- Testify in courts of law as required by clients
- Collect reference (buccal) samples from clients
- Technical reviews of forensic scientist's reports
- Accountable for technical operations of the laboratory

10/09 – 07/16

Human Identification Technologies, Redlands, CA

Forensic Scientist

- Perform forensic biology (DNA) testing
- Perform consultative services
- Generate scientific reports detailing evidence, examinations, results and conclusions
- Peer review other Forensic Scientists work for correctness and completeness
- Testify in courts of law as required by clients
- Collect reference (buccal) samples from clients

Expert Witness Testimony

Qualified as an expert in Forensic DNA Analysis in the following states:

- California
- Arizona
- Florida

Specialized Training

September 2021 **International Symposium of Human Identification – Orlando, FL**

General Session

October 2020 **STRmix Virtual Workshop**

This 4-day workshop will provide participants with extensive and full STRmix™ user training, covering likelihood ratios and sampling uncertainty, introduction to STRmix™, and a detailed description of the molecular models and mathematics on which STRmix™ is based. Also included are ample “hands on” sessions to allow participants to use and familiarise themselves with STRmix™ under the guidance of the instructors.

July 2020 **FBI 2020 QAS Quality Assurance Standards Auditor Assessment**

The Quality Assurance Standards (QAS) for Forensic DNA Testing Laboratories and the Quality Assurance Standards for DNA Databasing Laboratories were issued on July 1, 2020 by the FBI Director. The standards describe the quality assurance requirements that a laboratory performing DNA analysis or utilizing the Combined DNA Index System (CODIS) shall follow to ensure the quality and integrity of the data generated by the laboratory. These standards also apply to vendor laboratories that provide DNA analysis services to another laboratory or agency but do not take ownership of the DNA data for purposes of entry into CODIS.

The QAS/Auditor training sponsored by the FBI is a computer-based training (CBT) course that familiarizes the participants with the forensic and databasing standards, as well as techniques for preparing and performing QAS audits, and identifies documentation requirements for demonstrating compliance with the standards. Current or previously qualified DNA analysts are required to successfully complete this course in order to be qualified to conduct QAS audits.

February 2020 **American Academy of Forensic Sciences – Anaheim**

General Session

September 2019 **International Symposium of Human Identification – Palm Springs**

General Session

September 2019 **International Symposium of Human Identification – Palm Springs**

The Revised FBI Quality Assurance Standards for Forensic DNA Testing and Databasing Laboratories

July 2019 **Promega Technology– San Diego Sheriff’s Department**

Various presentations involving Y23 Validations and Direct to DNA validations. Interesting cases presented.

June 2019 **Forensic Technology Center of Excellence**

Probabilistic Genotyping in Court

November 2018 **ThermoFisher – HID University – Glendale, CA**

Full day discussing future trends in forensic DNA technology

October 2018 **CAC Seminar – San Diego, CA**

DNA Workshop

Full day including advancement in technologies in the forensic DNA field. New statistical approaches presented.

September 2017 **CAC Seminar – Newport Beach, CA**

DNA Workshop

Full day including advancement in technologies in the forensic DNA field. New statistical approaches presented.

August 2017 **QuantStudio 5 Real-Time PCR System installation training given by ThermoFisher Scientific – Pure Gold Forensics, Redlands, CA**

QuantStudio 5 Real-Time PCR System instrumentation overview

HID Real-Time v1.3 PCR Analysis Software overview

Instrument maintenance

Hands-on review of instrument, software and data

August 2017

CAC DNA Study Group and Meeting – San Bernardino, CA

“Soaking Method User to Recover DNA from Live and Discharged Cartridges.”

Discussion Involving Mega Loci Kits and the Probabilistic Genotyping Software Associated.

“The Last Day – The Erin Corwin Murder Case.” Guest Speaker – Trevis Newport

June 2017

FBI Quality Assurance Standards Auditor Assessment

The Quality Assurance Standards (QAS) for Forensic DNA Testing Laboratories and the Quality Assurance Standards for DNA Databasing Laboratories were issued on July 1, 2009 by the FBI Director. The standards describe the quality assurance requirements that a laboratory performing DNA analysis or utilizing the Combined DNA Index System (CODIS) shall follow to ensure the quality and integrity of the data generated by the laboratory. These standards also apply to vendor laboratories that provide DNA analysis services to another laboratory or agency but do not take ownership of the DNA data for purposes of entry into CODIS.

The QAS/Auditor training sponsored by the FBI is a computer-based training (CBT) course that familiarizes the participants with the forensic and databasing standards, as well as techniques for preparing and performing QAS audits, and identifies documentation requirements for demonstrating compliance with the standards. Current or previously qualified DNA analysts are required to successfully complete this course in order to be qualified to conduct QAS audits.

April 2017

ASCLD Webinar: DNA Standards and Guidelines

Forensic DNA Analysis, and in particular interpreting complex DNA mixtures and calculating statistics, can be challenging. The technology is ever more sensitive and analysts are testing a wider variety of samples than ever before. The FBI's Scientific Working Group on DNA Analysis Methods (SWGDM) has issued a new version of the autosomal DNA STR interpretation guidelines that most of the DNA laboratories in the country look to for guidance in analyzing DNA profiles. Mr. Sutton will be presenting information on the changes to the interpretation Guidelines including the background and scope of the changes. Specific examples will be presented. Mr. Heidebrecht and Ms. Conway will be answering questions and providing additional comments. In addition, Ms. Jocelyn Carlson will be presenting on the efforts of FBI and SWGDM to revise the FBI's Quality Assurance Guidelines for DNA Testing Laboratories.

March 2017

CAC DNA Study Group and Meeting

Validation of IntegenX RapidHIT 200 at the Orange County DA's Office

Fusion6C and Globalfiler Validations

STRMix and other Probabilistic Software

Keeping it "All in the family." How a Son and a Piece of Pizza Unmasked the Grim Sleeper Serial Killer. By Deputy in Charge Marguerite Rizzo Los Angeles District Attorney's Office

November 2016

CAC Seminar – Palm Springs, CA

General Session

November 2016

CAC Seminar – Palm Springs, CA

DNA Workshop

Full day including advancement in technologies in the forensic DNA field. Interesting cases presented

October 2016

CAC Seminar – Palm Springs, CA

SERATEC Biology Workshop

Using SERATEC Products to Identify Saliva Stains

May 2016 **CAC Seminar – North Hollywood, CA**

General Session

May 2016 **CAC Seminar – North Hollywood, CA**

Full day workshop covering new and emerging trends in DNA analysis and interpretation, such as advancements in capillary electrophoresis instrumentation; optimal collection of trace biological samples from evidence exemplars; validation and implementation of probabilistic genotyping systems, including STRmix and Armed Expert. DNA case studies from multiple agencies also presented

March 2016 **CAC DNA Study Group and Meeting**

Case study presentation from Patricia Huck, LAPD Crime Lab

5 - 10 min presentations on DNA-related topics or interesting/bizarre cases. (Please contact the chair through email before the study group if you are interested in presenting something)

Discussion of the following papers:

Comparison of Four Saliva Detection Methods to Identify Expecterated Blood Spatter

Educating Jurors about Forensic Evidence: Using an Expert Witness and Judicial Instructions to Mitigate the Impact of Invalid Forensic Science Testimony

“The Scent Discriminating K-9 and The Scent Transfer Unit 100” by Ann Anderson and Mike Grossman. Both are LASD contracted bloodhound handlers.

August 2015 **CAC Workshop – Orange County, CA**

Probabilistic Genotyping Workshop

May 2015 **CAC Seminar – Ventura, CA**

DNA: Mixture Interpretation and Probabilistic Genotyping

May 2015 **CAC Seminar – Ventura, CA**

Identification of Semen and Other Bodily Fluids

February 2015

AAFS Conference – Orlando, FL

Obtaining Successful DNA Profiles From Challenging Samples

February 2015

AAFS Conference – Orlando, FL

Quality Assurance in Human Identification

August 2014

Promega Technology Tour Seminar

Various presentations involving low-template DNA recovery, inhibition and new massively-parallel systems.

August 2014

CAC DNA Study Group and Meeting

Detective Orlando Martinez with the LAPD Homicide Division presentation on the investigation of the Michael Jackson death

Erick Reisinger (OCSD) on the STRMix

Shawn Montpetit or Patrick O'Donnell (SDPD) DNA from cartridge cases

Pia Rosner (LAPD) probabilistic workshop taken in St Louis

February 2014

CAC DNA Study Group and Meeting

Erik Bieschke - World Trade Center Mass Fatality Identifications at the City of New York Office of Chief Medical Examiner (OCME)

February 2014

AAFS Conference – Seattle, WA

Development of Emerging DNA Technologies for Identification:
Expanding the Capabilities of a Missing Persons Laboratory

February 2014

AAFS Conference – Seattle, WA

Applications of Next Generation Sequencing in Forensic DNA Analysis

January 2014

CAC DNA Study Group and Meeting

Dr. Cynthia Bir - Injury Biomechanics - Engineering An Approach to Forensics

Promega - Examination of proposed manufacturing standards using low template DNA.

May 2013

CAC DNA Study Group and Meeting

Various presentations on new and improved technologies involving new chemistry, technology and statistics.

March 2013

CAC DNA Study Group and Meeting

The legal consequences of changed expert opinions after trial, as well as updates on other legal issues of interest to forensic scientists. Given by CA Deputy Attorney General Mike Chamberlain

February 2013

AAFS Conference – Washington, D.C.

Calculating Likelihood Ratios Incorporating a Probability of Drop-Out.
Introducing Lab Retriever

February 2013

AAFS Conference – Washington, D.C.

DNA in Real Time: Amplifying Productivity in Today's Forensic Laboratory

June 2012

CAC DNA Study Group and Meeting

The Bomb House presented by Richard Legler

Largest cache of homemade explosives found in United States history.

January 2012

CAC DNA Study Group and Meeting

LAPD Robbery Homicide Detectives (RHD) Paul Coulter and Dennis Kilcoyne

Serial Murder Investigation - The Grimm Sleeper

2011

Forensic Training Network partnered with NIJ

13 Module DNA Course

2011

Forensic Training Network partnered with NIJ

Principles and Thought Processes of Crime Scene Investigation

2011 **National Institute of Justice**

Intro to Uncertainty in Forensic Chemistry and Toxicology

2011 **National Institute of Justice**

Mapping and Exhumation of Clandestine Burials

Membership in Professional Organizations

- American Academy of Forensic Sciences (AAFS)
- California Association of Criminalists (CAC)
- California Attorneys for Criminal Justice (CACJ)

Licenses

- Forensics Biology/DNA Analyst - Texas FSC License #0000736

EXHIBIT B

**PURE GOLD FORENSICS**

303 Brookside Ave, Suite 140

Redlands CA, 92373

(909) 793-3820 (Phone)

(909) 793-3842 (Fax)

Testing Report**Testing Performed**

STR-DNA Testing

PGF Case #:	PGT-21-001	Date of Report:	April 12, 2021
Client:	Greg Nicolaysen		
Address:	27240 Turnberry Lane Valencia, CA 91355		
Phone:	(818) 970-7247		
Email:	gregnicolaysen@aol.com		
Agency Case #	18-CR-00774-JAK		
Suspect:	Alejandro Sandoval		
Victim:	N/A		

Reference

This report is in reference to the following item of evidence which was collected by Theron Vines on February 5, 2021:

Agency Item Designation	Description	Barcode Number	PGF Item Number
N/A	Reference Buccal Swab from Alejandro Sandoval	PGT-21-001-001	1

This report also is in reference to the following items of evidence which were collected by Theron Vines on March 23, 2021:

Agency Item Designation	Description	Barcode Number	PGF Item Number
N/A	Swab from Clear Plastic Bag (Exhibit 15)	PGT-21-001-002	2
N/A	Swab from Clear Plastic Bag (Exhibit 16)	PGT-21-001-003	3

DNA Analysis:

A portion of the following item was extracted for DNA analysis:

PGF Item Designation Description

1	Reference Buccal Swab from Alejandro Sandoval
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The following items were extracted for DNA analysis:

PGF Item Designation Description

2	Swab from Clear Plastic Bag (Exhibit 15)
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3	Swab from Clear Plastic Bag (Exhibit 16)
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Results/Conclusions

ITEM 1: REFERENCE BUCCAL SWAB FROM ALEJANDRO SANDOVAL

A complete single-source male profile was obtained from this item.

ITEM 2: SWAB FROM CLEAR PLASTIC BAG (EXHIBIT 15)

A low-level, partial STR-DNA profile was obtained from this item at 7 of 24 loci. Due to the low-level of DNA detected, this profile is not suitable for comparison using manual interpretation methods.

ITEM 3: SWAB FROM CLEAR PLASTIC BAG (EXHIBIT 16)

A low-level, partial STR-DNA profile was obtained from this item at 15 of 24 loci. This profile is consistent with a mixture of at least two individuals, with at least one male. Assuming the presence of only 2 contributors, a major profile was determined at 4 loci. Alejandro Sandoval is eliminated as a possible major contributor to the DNA profile obtained from item 3.

Due to the uncertain number of contributors and the low level of DNA detected, the minor contributor profile is not suitable for comparison purposes.

Disposition of Evidence

The remainder of the evidence under barcode **PGT-21-001-001** will be returned to the submitter. The evidence under barcodes **PGT-21-001-002** and **PGT-21-001-003** were consumed during analysis. The DNA analysis by-products generated during the analyses in this case will be stored at Pure Gold Forensics under barcode number **PGT-21-001-004** for two (2) years from the date of this report. **The DNA analysis by-products will be destroyed after two (2) years unless the following occurs:**

The agency(s) from which the original evidence was received must notify Pure Gold Forensics in writing at least ninety (90) days prior to the date of destruction of the DNA analysis by-

Testing Report

PGT-21-001

April 12, 2021

products if said agency(s) require extended storage of the evidence and DNA analysis by-products.

Analysis:

A handwritten signature in black ink, appearing to read "Theron L. Vines III". The signature is stylized with a large, sweeping initial "T" and "V".

Theron L. Vines III, MS
Technical Leader

Technical Review:

A handwritten signature in black ink, appearing to read "Suzanna R. Ryan". The signature is written in a cursive, flowing style.

Suzanna R. Ryan, MS
Laboratory Director

Globalfiler™ Alleles Detected

Item and Sample Description	#1 Reference Buccal Swab from Alejandro Sandoval	#2 Swab from Clear Plastic Bag (Exhibit 15)	#3 Swab from Clear Plastic Bag (Exhibit 16)	#3 Major
Locus:				
D3S1358	15,16	NR	15,18*	15,18
vWA	14,16	NR	17*	-
D16S539	12,13	NR	NR	-
CSF1PO	9,10	NR	NR	-
TPOX	8,11	NR	NR	-
Y indel	2	2	NR	-
AMELOGENIN	X,Y	X	X,Y	X,X
D8S1179	13,15	NR	11*,14*	-
D21S11	29,29	NR	29*,30*	-
D18S51	14,17	NR	NR	-
DYS391	10	NR	NR	-
D2S441	10,11	NR	11*,14*	-
D19S433	14.2,15	NR	14.2*,15.2*	-
TH01	9,9.3	NR	NR	-
FGA	21,25	NR	21*,26*	-
D22S1045	11,17	NR	15	15,15
D5S818	11,12	NR	10*,12*	-
D13S317	11,11	12*	12*	-
D7S820	9,10	NR	NR	-
SE33	18,29.2	NR	NR	-
D10S1248	14,15	15*	13,16,[14*]	13,16
D1S1656	14,14	12*	15*,15.3*	-
D12S391	19,20	22*	22*	-
D2S1338	17,25	19*	23*	-
Injection Time (seconds)	5	10	10	

NR = No Results at this locus

* = Weak allele that may have an undetected sister allele if part of a heterozygous pair

[] = Minor Allele

- = Major undetermined at this locus.

Description of Testing Methodologies Employed (‘x’ indicates method used in this case)

Body Fluid Testing

	Ortho-tolidine	Used as a presumptive test for suspected bloodstains		Seratec® HemDirect	Used in concert with sample appearance, the ortho-tolidine test, and human DNA typing results to determine if human blood is present. Note: this test is known to cross-react with higher primates and ferrets. Therefore, a conclusion that human blood is present is based on the entire analysis scheme and assumes the absence of ferret and/or higher primate blood.
	Acid Phosphatase (AP)	Used as a presumptive test for suspected semen stains		Seratec® PSA Semiquant	Used to detect the presence of prostate-specific antigen (PSA), found in high concentrations of semen
	Alternate Light Source (ALS)	Used to locate biological stains such as semen by promoting fluorescence		Cellular microscopy	Extracts are stained with safranin (or nuclear fast red) followed by picroindigocarmine
	Lugol's Iodine Test	Used for the presumptive identification of vaginal epithelial cells		M-Vac	Wet vacuum DNA collection system
	Seratec® PMB	Used to indicate the presence of menstrual fluid		DMAC	(p-dimethylaminocinnamaldehyde) Test for Urea Note: This test is known to cross-react with human breast milk and semen
	Phadebas	Used to test for the presence of alpha-amylase		RSID™ Urine	Used for detection of THP (Tamm-Horsfall) the most abundant protein present in urine
	RSID™ Saliva Kit	Used for detection of human salivary amylase, a component of saliva Note: This test is known to cross-react with human breast milk and high concentrations of sweat			

DNA Extraction

X	Organic extraction (phenol/chloroform, NucleoSpin)
X	Chelex® Extraction
	Differential extraction-designed to separate non-sperm cell DNA from sperm cell DNA (phenol/chloroform, NucleoSpin)
	Concentration of extracts using Vacufuge

Testing Report

PGT-21-001

April 12, 2021

DNA Quantitation

X	Applied Biosystems Quantifiler Trio™ assay via QuantStudio™ 5 Real-Time PCR System
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DNA Amplification

X	Applied Biosystems Globalfiler™ PCR Amplification Kit
	Applied Biosystems Yfiler™ Plus PCR Amplification Kit

Polymerase Chain Reaction (PCR) is used to amplify the following short tandem repeat (STR) loci:

Globalfiler™

D3S1358	TPOX	D21S11	D19S433	D5S818	D10S1248
vWA	Y indel	D18S51	TH01	D13S317	D1S1656
D16S539	AMELOGENIN	DYS391	FGA	D7S820	D12S391
CSF1PO	D8S1179	D2S441	D22S1045	SE33	D2S1338

Yfiler™ Plus

DYS576	DYS389I	DYS635	DYS389II	DYS627	DYS640
DYS458	DYS19	YGATAH4	DYS448	DYS391	DYS456
DYS390	DYS438	DYS392	DYS518	DYS570	DYS437
DYS385	DYS449	DYS393	DYS439	DYS481	DYF3871
DYS533					

STR Typing

X	Capillary Electrophoresis via ABI 3130 Genetic Analyzer
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EXHIBIT C

**PURE GOLD FORENSICS**

303 Brookside Ave, Suite 140
Redlands CA, 92373
(909) 793-3820 (Phone)
(909) 793-3842 (Fax)

**Supplemental Testing Report****Testing Performed**

STRmix Probabilistic Genotyping

PGF Case #:	PGT-21-001	Date of Report:	September 3, 2021
Client:	Greg Nicolaysen		
Address:	27240 Turnberry Lane Valencia, CA 91355		
Phone:	(818) 970-7247		
Email:	gregnicolaysen@aol.com		
Agency Case #	18-CR-00774-JAK		
Suspect:	Alejandro Sandoval		
Victim:	N/A		

Reference

This report cross-references the PGF report dated April 12, 2021 and is in reference to the following items of evidence:

Agency Item Designation	Description	Barcode Number	PGF Item Number
N/A	Reference Buccal Swab from Alejandro Sandoval	PGT-21-001-001	1
N/A	Swab from Clear Plastic Bag (Exhibit 15)	PGT-21-001-002	2
N/A	Swab from Clear Plastic Bag (Exhibit 16)	PGT-21-001-003	3

Results/Conclusions**ITEM 2: SWAB FROM CLEAR PLASTIC BAG (EXHIBIT 15)**

A mixture of DNA of at least 2 contributors with at least 1 male was obtained from item 2.

Assumed number of DNA contributors: 2
Estimated mixture ratio: 69:31
Assumed contributor(s): N/A

Person of Interest	Likelihood Ratio (LR)	Level Of Support
Alejandro Sandoval	2.2 x 10 ⁻²	Limited Support for Exclusion

The mixture of DNA obtained from item #2 is 45 times more likely if it originated from two unknown contributors than if it originated from Alejandro Sandoval and one unknown contributor.

ITEM 3: SWAB FROM CLEAR PLASTIC BAG (EXHIBIT 16)

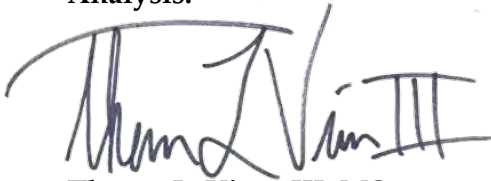
A mixture of DNA of at least 2 contributors with at least 1 male was obtained from item 3.

Assumed number of DNA contributors: 2
Estimated mixture ratio: 81:19
Assumed contributor(s): N/A

Person of Interest	Likelihood Ratio (LR)	Level Of Support
Alejandro Sandoval	4.2×10^{-2}	Limited Support for Exclusion

The mixture of DNA obtained from item #3 is 24 times more likely if it originated from two unknown contributors than if it originated from Alejandro Sandoval and one unknown contributor.

Analysis:



Theron L. Vines III, MS
Technical Leader

Technical Review:



Suzanna R. Ryan, MS
Laboratory Director

Description of Testing Methodologies Employed (‘x’ indicates method used in this case)

Body Fluid Testing

	Ortho-tolidine	Used as a presumptive test for suspected bloodstains		Seratec® HemDirect	Used in concert with sample appearance, the ortho-tolidine test, and human DNA typing results to determine if human blood is present. Note: this test is known to cross-react with higher primates and ferrets. Therefore, a conclusion that human blood is present is based on the entire analysis scheme and assumes the absence of ferret and/or higher primate blood.
	Acid Phosphatase (AP)	Used as a presumptive test for suspected semen stains		Seratec® PSA Semiquant	Used to detect the presence of prostate-specific antigen (PSA), found in high concentrations of semen
	Alternate Light Source (ALS)	Used to locate biological stains such as semen by promoting fluorescence		Cellular microscopy	Extracts are stained with safranin (or nuclear fast red) followed by picroindigocarmine
	Lugol's Iodine Test	Used for the presumptive identification of vaginal epithelial cells		M-Vac	Wet vacuum DNA collection system
	Seratec® PMB	Used to indicate the presence of menstrual fluid		DMAC	(p-dimethylaminocinnamaldehyde) Test for Urea Note: This test is known to cross-react with human breast milk and semen
	Phadebas	Used to test for the presence of alpha-amylase		RSID™ Urine	Used for detection of THP (Tamm-Horsfall) the most abundant protein present in urine
	RSID™ Saliva Kit	Used for detection of human salivary amylase, a component of saliva Note: This test is known to cross-react with human breast milk and high concentrations of sweat			

DNA Extraction

	Automate Express Prepfilr™ Extraction		Organic extraction (phenol/chloroform, NucleoSpin)
	Differential extraction-designed to separate non-sperm cell DNA from sperm cell DNA (Automate Express Prepfilr™)		Differential extraction-designed to separate non-sperm cell DNA from sperm cell DNA (phenol/chloroform, NucleoSpin)
	Concentration of extracts using Vacufuge		Chelex® Extraction

DNA Quantitation

	Applied Biosystems Quantifiler Trio™ assay via QuantStudio™ 5 Real-Time PCR System
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DNA Amplification

	Applied Biosystems Globalfiler™ PCR Amplification Kit
	Applied Biosystems Yfiler™ Plus PCR Amplification Kit

Polymerase Chain Reaction (PCR) is used to amplify the following short tandem repeat (STR) loci:

Globalfiler™

D3S1358	TPOX	D21S11	D19S433	D5S818	D10S1248
vWA	Y indel	D18S51	TH01	D13S317	D1S1656
D16S539	AMELOGENIN	DYS391	FGA	D7S820	D12S391
CSF1PO	D8S1179	D2S441	D22S1045	SE33	D2S1338

Yfiler™ Plus

DYS576	DYS389I	DYS635	DYS389II	DYS627	DYS640
DYS458	DYS19	YGATAH4	DYS448	DYS391	DYS456
DYS390	DYS438	DYS392	DYS518	DYS570	DYS437
DYS385	DYS449	DYS393	DYS439	DYS481	DYF3871
DYS533					

STR Typing

	Capillary Electrophoresis via ABI 3130 Genetic Analyzer
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STRmix™

X	Probabilistic Genotyping
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The verbal scale below is used to describe a level of support for an explanation of the observed DNA evidence. The verbal qualifier is based on the value of the likelihood ratio.

<u>LR for Hp Support</u>	<u>Verbal Qualifier</u>
1	Uninformative
2 - 99	Limited Support
100 - 9,999	Moderate Support
10,000 - 999,999	Strong Support
≥ 1,000,000	Very Strong Support

<u>1/LR for Hd Support</u>	<u>Verbal Qualifier</u>
1	Uninformative
2 - 999	Limited Support for Exclusion
≥ 1,000	Exclusion